

Python Full Stack

S. No.	Topic	Subtopic	Learning Outcome	Hours
1	Introduction to Full Stack Development	- Overview of Full Stack Development	- Understand the role and responsibilities of a full-stack developer.	1
		- Technology Stack Overview	- Learn about the different technologies involved in full-stack development (Frontend, Backend, Database).	1
		- Setting Up Development Environment	- Set up the development environment including IDEs, version control, and package managers.	2
2	Python Programming Basics	- Introduction to Python	- Learn the basics of Python programming, including syntax, variables, and data types.	3
		- Control Structures (if, for, while)	- Understand control structures in Python for flow control and decision making.	2
		- Functions and Modules	- Write reusable code using functions and organize code with modules.	2
3	Object-Oriented Programming in Python	- Classes and Objects	- Learn the principles of object-oriented programming in Python, including classes and objects.	2
		- Inheritance and Polymorphism	- Implement inheritance and polymorphism to create complex and reusable code structures.	1
		- Error Handling and Exceptions	- Handle errors gracefully using Python's exception handling mechanisms.	1
4	Frontend Development Basics	- HTML5 and CSS3	- Create structured web pages using HTML5 and style them with CSS3.	3
		- JavaScript Basics	- Learn the basics of JavaScript for adding interactivity to web pages.	3
		- Responsive Design (Bootstrap)	- Implement responsive web design using Bootstrap to ensure web pages work on different devices.	3
5	Advanced Frontend Development	- JavaScript ES6+	- Understand advanced JavaScript concepts, including ES6+ features like arrow functions, classes, and modules.	3
		- Frontend Frameworks (React.js/Angular/Vue.js)	- Gain proficiency in one of the popular frontend frameworks for building dynamic user interfaces.	5
6	Backend Development with Python and Django	- Introduction to Django	- Learn the basics of Django, a high-level Python web framework, for backend development.	4
		- Django Models and ORM	- Understand Django's ORM for interacting with SQL databases using Python code.	4
		- Django Views and Templates	- Create dynamic web pages using Django views and templates.	4
		- RESTful APIs with Django Rest Framework (DRF)	- Design and develop RESTful APIs using Django Rest Framework.	4
7	Database Management with SQL	- Introduction to SQL Databases	- Understand the fundamentals of SQL databases and their role in full-stack development.	3
		- SQL Basics	- Perform database operations using SQL, including creating, reading, updating, and deleting (CRUD) data.	3
		- Advanced SQL Queries	- Write complex SQL queries for data retrieval and manipulation.	2
		- Database Integration with Django	- Integrate SQL databases with Django applications using Django's ORM.	3
8	Advanced Backend Development	- Authentication and Authorization in Django	- Implement secure user authentication and authorization in Django applications.	3
		- Session Management and Cookies	- Manage user sessions and cookies in a secure and efficient manner.	3
		- Asynchronous Programming in Django (Async Views)	- Learn asynchronous programming in Django for handling concurrent requests.	3
9	Python AI Integration	- Introduction to AI and Machine Learning	- Understand how AI and ML can be integrated into web applications.	1
		- Machine Learning Models in Python	- Develop and deploy basic machine learning models using Python libraries like Scikit-learn.	4
		- AI Integration with Django Applications	- Integrate AI models into Django web applications for enhanced functionality (e.g., recommendation engines).	4
10	Security Skills for Full Stack Developers	- Importance of Web Security	- Understand the basics of web application security and its significance.	1
		- Secure Coding Practices in Django	- Apply secure coding practices to prevent security breaches in Django applications.	1
		- Implementing HTTPS and SSL in Django	- Secure Django applications using HTTPS and SSL certificates.	1
11	DevOps Basics	- Introduction to DevOps	- Understand the role of DevOps in full-stack development and the CI/CD pipeline.	1
		- Version Control with Git and GitHub	- Use Git and GitHub for version control and collaboration in development projects.	1
		- Continuous Integration/Continuous Deployment (CI/CD)	- Learn the basics of CI/CD and automate the deployment of Django web applications.	1
12	Project Development	- Full Stack Application Planning	- Plan and design a full-stack application using Django.	1
		- Implementation and Integration	- Develop and integrate frontend, backend, and database components into a cohesive Django application.	4
		- Testing and Debugging	- Test and debug the application to ensure it meets functionality and security requirements.	2